BONY CYSTS OF THE MIDDLE TURBINATED BODY.

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THE occurrence of cysts having bony walls in the anterior end of the middle turbinated body has long been known. A number of such cases have been reported, and the symptoms and treatment of this condition are now well understood.

My own experience with bony cysts of the concha media or concha bullosa is limited to the following three cases.

CASE I.—Mrs. L., aged fifty-nine years, complained of long-standing headache and of dryness in the nasal passages and pharynx. There was no marked hinderance to nasal respiration. A bilateral, smooth, roundish enlargement of the anterior ends of both middle turbinated bodies was found. They were both covered with a somewhat thickened mucous membrane. The largest was about the size of a small hickory-nut. A puncture showed the enlargement to consist of an empty cavity having thin bony walls.

CASE II.—Mr. A., aged thirty years, had suffered for a number of years from troublesome headaches and with difficulty in breathing through the right side of the nose. A smooth, roundish tumor completely filled the right side of the nose with the exception of a small space near the floor. The septum was pushed somewhat into the left naris. The mucous membrane covering the tumor was thickened and soggy. The tumor filled the nose so completely that the snare could not be passed around it. It was easily removed in fragments with polyp forceps, and proved to be a large cyst in the anterior end of the middle turbinated body. The walls were of very thin bone. The cavity was empty and lined with a thin glistening of mucous membrane. Its removal left the right nasal passage so roomy that the ostium sphenoidalis could be readily seen.

CASE III was discovered in the post-mortem room. The accompanying drawings were made from this case. The concha bullosa here extended forward into the atrium and reached to within one centimetre of the floor of the nose. The cyst had very thin bony walls, and the cavity was empty and lined with smooth mucous membrane. It measured twenty-eight millimetres long by twenty-five millimetres broad. It communicated freely with the middle meatus through a semilunar opening near its upper border. It communicated further with the frontal sinus, with a large ethmoid cell pushed into the frontal sinus, and with the ethmoid labyrinth above and behind. The cyst is clearly in this case part of the ethmoid labyrinth, and represents a greatly enlarged ethmoid cell that has developed in the anterior end of the concha media, just as the large cell in the frontal sinus is an ethmoid cell and part of the ethmoid labyrinth. Another anomaly in this case was a large ethmoid cell which communicated freely with the frontal sinus and opened into the superior meatus, and through the cyst of the concha media into the middle meatus.

These bone cysts of the concha media are, as a rule, empty air-containing cavities, but, like any of the accessory cavities of the nose, they may become involved in an inflammation. Thus the cyst sometimes becomes the seat of a mucocele or an empyema. Most of the cases reported have occurred in young women. The condition has only been found in adults.

Regarding the etiology of such cysts there has been considerable difference of opinion. Glasmacher,[1] who was one of the first to describe such a cyst, considered it as a greatly enlarged ethmoid cell with a tendency to continue gradually increasing in size, but not a pathological condition, any more than any large ethmoid cell is pathological. The view that such a cyst represents an ethmoid cell is held also by Heymann,[2] Zwillinger,[3] Meyerson,[4] Steida,[5] and Sundholm.[6]

Another view of the origin of such cysts is that advanced by Greville MacDonald.[7] He held that what he called an "osteophytic periostitis" caused the lower free edge of the concha media to elongate and curl upon itself in such a way that the free edge was approximated along the base of the body in the middle meatus, where it became attached along the border and at the ends, forming a closed pocket. The mucous membrane of the concave surface of the concha media, which lined the pocket, continued to secrete mucus, which ultimately caused a distention of the walls of the cavity, and thus formed the concha bullosa.

A view held by Hajek corresponds quite closely with the theory of MacDonald. Hajek holds that there are two types of cystic enlargement of the concha media. One type[8] is formed by a developmental peculiarity consisting of a curling under the free edge of the concha media until it forms a cavity which communicates with the middle meatus. Such a cyst may become the seat of a mucocele[9] or an empyema.[10] The second type[11] is formed by a circumscribed dilatation of the concha media, the result of an empyema of the ethmoid labyrinth in which dilatation has taken place downward into the middle turbinated body.

Max Schaeffer[12] makes a distinction between a cystic enlargement of the middle turbinated body caused by extension downward of an empyema of the ethmoid labyrinth and what he considered a true bone cyst of the concha media, "echte Knochenblasen." This latter Schaeffer has always found filled with mucous and not associated with any further disease of the ethmoid labyrinth. He admits the possibility, however, of its being the seat of an empyema which might extend upward and involve the ethmoid labyrinth.

Zuckerkandl[13] holds the following view of the origin of the concha bullosa. The lateral concave surface of the concha media in its middle and posterior thirds forms with the outer wall of the middle meatus a cavity called the sinus of the concha media. The upper part of this sinus is often divided by bony bridges extending between its curved walls into niches which communicate freely with the chief sinus. The formation of the concha bullosa he considers the result of the extension of one or more of the pockets thus formed over into the concha media. The cyst, according to Zuckerkandl, always opens freely into the middle meatus. The cavity represents an ethmoid cell analogous to the cell that develops in the unciform process.

The mistake has sometimes been made of confusing a condition of circumscribed bone disease occasionally found involving the inferior turbinated body with the true bone cyst lined with epithelium and having thin bony walls as found in the anterior end of the concha media. Such a cyst as this has never been found in the inferior turbinated body for the reason that the concha inferior is no part of the ethmoid bone, and is never the seat of an ethmoid cell as is the concha media. A theory referred to by Knight,[14] and recently again by McKinney,[15] that the bone cysts of the nose were the result of a "rarefying ostitis" might perhaps be applied to the process that occasionally involves the concha inferior, but that a rarefying ostitis is the cause of the true bone cyst of the concha media is entirely without any evidence in fact.

That the concha bullosa represents but an enlarged ethmoid cell can scarcely be questioned. The concha media and its analogous structures, the bulla ethmoidalis and the processus uncinatus, represent but the median extension into the nasal cavity of partition plates of the ethmoid labyrinth. The bulla is usually the seat of an ethmoid cell, and it is common to find an ethmoid cell in the unciform process. In the same way, the base of the anterior end of the concha media is often occupied by an ethmoid cell. Such a cell may communicate with the ethmoid labyrinth above, or it may form according to the method described by Zuckerkandl and open alone into the middle meatus, or, as shown in one of Hajek's illustrations,[16] it may open into the superior meatus. It is the excessive development of such a cell in the concha media that produces the concha bullosa. Of the theory referred to by MacDonald, that the cavity is due to an osteophytic periostitis of the middle turbinated body, causing it to curl upon itself and thus forming the cavity, and the somewhat similar view held by Hajek, it can only be said that such theories can never be definitely proven by the examination of cases *in vivo,* and from cases studied post-mortem there has as yet been nothing found that would uphold such a view.

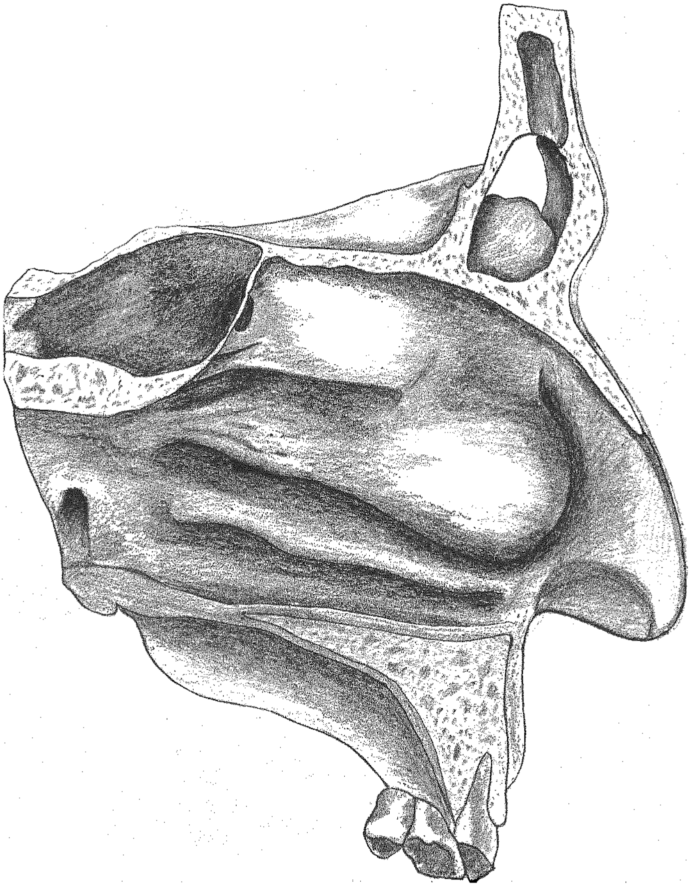

FIG. 1.—Left lateral wall of the nose, showing cystic enlargement of the anterior end of the middle turbinated body (concha bullosa); also large ethmoid cell in the frontal sinus (bulla frontalis.)

To what can we attribute the enlargement of the cell of the concha media to the huge proportions of the concha bullosa, as shown in Figs. 1 and 2?

The view was formerly quite generally held that the enlargement represented an ectasia from the pressure of inflammatory discharge occurring in a cell, the outlet of which had become closed. It can be readily understood that a rapid

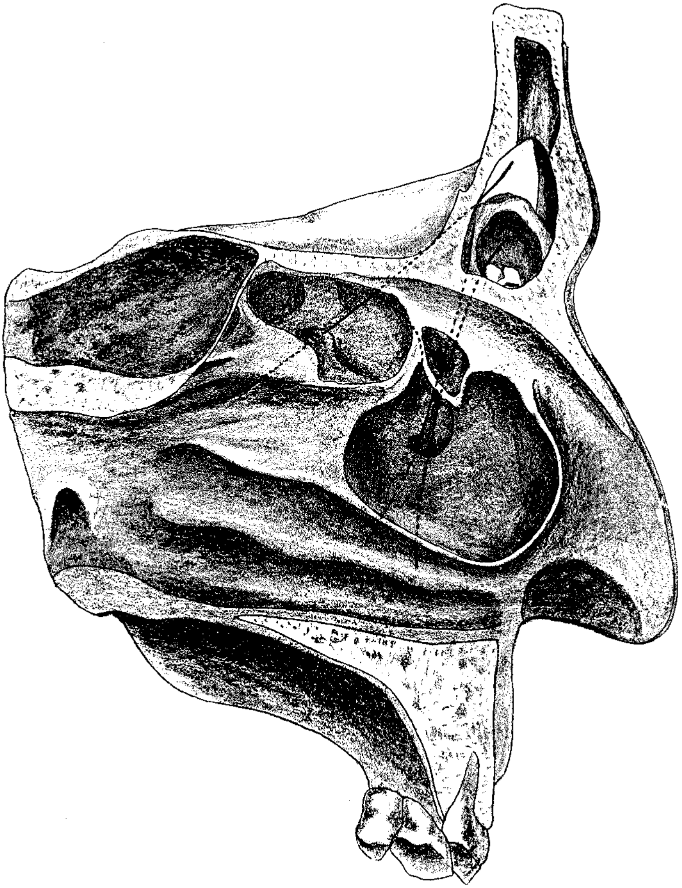

FIG. 2.—Same as Fig. 1, with median wall of concha bullosa and of the ethmoid cells removed to show free communication of the cyst of the middle turbinated body with the middle meatus of the nose, with the frontal sinus, with the large cell pushed into the frontal sinus, and with the ethmoid labyrinth above and behind.

distention of the walls of such a cell may result from an empyema of the cell as occurred in a case reported by Fraenkel.[17] Whether the inflammation is an extension downward into the turbinated body from a disease of the ethmoid labyrinth in a case where the cell of the concha media opens into the ethmoid labyrinth, or whether the disease is limited to a cell in the concha media that does not communicate with the labyrinth above, but has its outlet into the middle or superior meatus, the process is, of course, exactly the same. The explanation that the concha bullosa always represents an ectasia from a closed inflammation cannot, however, be accepted, since these cysts are usually found empty, nor do they show any positive evidence of a past inflammatory process.

The view has been held by some that a long-standing rhinitis sets up in the walls of the cell a periostitis that produces a gradual enlargement of the cavity, but the great frequency of chronic rhinitis and the extremely rare occurrence of the enlargement of this cell makes this theory highly improbable. The existence of chronic rhinitis in the presence of a concha bullosa should be looked upon as an entirely separate condition, or, at most, possibly the result rather than the cause of the concha bullosa.

The cells of the ethmoid labyrinth show the most marked variation in their normal development. Sometimes a great many small cells, at other times only a couple of very large cells, compose the labyrinth. The ethmoid cells show a tendency to develop outside the usual limits of the labyrinth, as in the frontal sinus, the unciform process, and the anterior end of the concha media. These ethmoid cells have the same tendency as the cells of the typical labyrinth to expand occasionally into large cavities, producing the bulla frontalis or large cell in the frontal sinus and the concha bullosa or cystic enlargement of the anterior end of the concha media. The concha bullosa should be looked upon not as an inflammatory product, but as an anatomical variation, the result of a developmental anomaly. The fact that the concha bullosa has only been found in adults may possibly be explained by the fact that, like other accessory cavities of the nose, the cell of the concha media does not reach its full development in childhood.

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